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Q.1:- What do you know about parasites.
explain endo and ecto parasites

Parasite:- in detail?

Parasite is defined as an animal or plant that lives in or upon another organism (Host) and draws its nutrients directly from it.

E.g. include Bacteria, Mites, Fungi, protozoa and helminths

Study of Parasite is known as parasitology. Medical parasitology is the study of animal parasite that infect and produce diseases in humans.

Classification of Parasites

(1) Ecto-parasite :-

The parasite that live on the outer surface or in the superficial tissues of the host are called ectoparasite. infection

Caused by these parasites is called infestation. E.g Lice

② Endo-parasite :-

The parasite that live within the Host are called endoparasite. Invasion by such parasite is called infection. Eg. Leishmania.

Q2

Explain protozoa, its characteristics and morphology, also classify protozoa on the basis of motility and reproduction into its type.

Ans:- Protozoa :-

- The word protozoa is
- * Come from Greek protozoon word meaning "First Animal".
 - * Protozoa are unicellular (may be Multicellular) Eukaryotic microorganisms.
 - * Protozoa constitute a large group of about 65,000 species. Most of which are harmless free living and inhabits water and soil.
 - * A few species are pathogenic in nature. Hundreds of million of infection in a

year around the world.

(3)

{ Characteristics }

- ⇒ Mostly Unicellular organism with fully functional cell.
- ⇒ Live freely, may be parasitic or symbiotic.
- ⇒ Protozoa are chemo-heterotrophs.
- ⇒ They are motile have locomotive organelles. E.g. Flagella and cilia for movement.

{ Morphology }

- ⇒ Protozoa are Eukaryotic resemble to animal cell contain major cell organelles (including, Nucleus, Mitochondria)
- ⇒ Their organelles are highly specialized for feeding, reproduction and movement.
- ⇒ The cytoplasm of protozoa are divided into an outer layer called Ectoplasm and an inner layer called Endoplasm
- ⇒ Ectoplasm helps in movement, feeding and protection.
- ⇒ Endoplasm houses nucleus, mitochondria and food.

{ Classification of Protozoa }

(4)

- => Protozoa are classified on the basis of their motility and method of reproduction
- => They are classified into Four main types.

- => Flagellates
- => Ciliates
- => Sarcodina
- => Sporozoates

{ Reproduction of protozoa }

- => Protozoa can reproduce their off spring by both Sexual and Asexual methods.
- => Asexual method of reproduction are:
- => Budding
 - => Binary fission
 - => Schizogony or Multiple Fission
- => Sexual method
- => Conjugation
 - => Gametogony

Q.3 :- Write down the name of organelles and its function present in paramaecium and euglena. (5)

Ans:-

Paramaecium :-

Organelles:-

Function:-

① Cytoplasm =>

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Support the internal structure and shape and consistency of the cell

② Cilia =>

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Movement, food intake receptors

③ Anal pore =>

feces secretion

④ Micronucleus =>

reproduction.

⑤ Macronucleus =>

Non reproductive cell

function E.g. Metabolism

⑥ Oral groove =>

food intake through cilia.

Euglena :-

Organelles

Function:-

① Cytoplasm =>

Support the internal structure and shape.

② Nucleolus =>

Contribute to ribosome synthesis

③ Flagellum =>

Movement.

④ Chloroplast =>

Photosynthesis

⑤ Contractile vacuule =>

Expels excess water.

Q4 :- What is antibiotic resistance? (6)
Explain the mechanism of bacterial resistance, its causes and solution to the problem.

Ans :-

Antibiotics :-

- ⇒ Produced by microorganism.
- ⇒ Inhibit the growth or kill of other microorganisms.
- ⇒ At a very low concentration.
- ⇒ Not affecting the host cell.
- ⇒ Example: Ciprofloxacin, Erythromycin.

Antibiotic Resistance :-

Antibiotic resistance occurs when an antibiotic has lost its ability to effectively control or kill bacterial growth; in other words, the bacteria are "resistant" and continue to multiply in the presence of therapeutic levels of an antibiotic.

Mechanisms of bacterial antibiotic resistance.

⇒ Denied access :-

Antibiotics want to pass the bacterial cell membrane but membrane becomes impermeable for antibiotic e.g. Imipenem.

⇒ Antibiotic modification :-

In second step antibiotic becomes modified by the help of —

bacterial enzyme e.g. beta-lactamase (7)
inactivates penicillin.

⇒ Altered Target site:-

antibiotic cannot
bind to its intended target because
the target itself has been modified.

⇒ Pumping out:-

The antibiotic faster than
it gets in. e.g. tetracycline.

⇒ Alternative Targets:-

(typically enzyme)
e.g. Alternative penicillin binding protein
(PBP2a) in MRSA.

{ Causes of Antibiotic Resistance }

- ① Over prescription antibiotics
- ② Patient Non-Compliance
- ③ Over dose of antibiotics
- ④ Use of antibiotics on domestic animals
- ⑤ Poor quality of antibiotics
- ⑥ Poor hygiene and sanitation.

- ∴ Solution ∴ -

- * Only use antibiotics when prescribed by a certified health professional
- * Never demand antibiotics if your health worker says you don't need them

- (18)
- * Never use left over antibiotics.
 - * Never share antibiotics with others.
 - * Make information available on the impact of antibiotics resistance.

Q5
Explain the Mechanism of bacterial pathogenicity. Write down at least two bacterial disease in detail.

Ans:- Mechanism of bacterial pathogenicity:-

① Invasiveness :- The ability to invade tissue.

- => encompasses mechanism for
- => colonization (adherence and initial multiplication).
- => Production of extracellular substances which facilitate invasion (invasins) and
- => ability to bypass or overcome host defence mechanisms.

② Toxigenesis :- ability to produce Toxins.
Bacteria may produce two types Toxins.

- (i) exotoxins
- (ii) endotoxins.

=> Exotoxins :- are released from bacterial cells and may act at tissue sites removed from the site of bacterial growth.

⇒ Endotoxins :-

(9)

are cell-associated substance. (classic sense, endotoxin refers to the lipopolysaccharide component of the outer membrane of Gram-negative bacteria)

⇒ Some bacterial toxins may also act at the site of colonization and play a role in invasion.

{ Bacterial Disease }

① Meningitis :-

Meningitis is inflammation the lining around the brain and spinal cord. It is usually caused by an infection.

Types of Meningitis :-

Viral

⇒ It is fairly common
⇒ It is usually doesn't cause serious illness
⇒ In severe cases, it can cause prolonged fever and seizures.

Bacterial

⇒ It is not a common
⇒ But it's very serious
⇒ It's need to be treated right away to prevent brain damage and death.

P.T.U/13

② Sinusitis :-

⇒ Sinusitis is an inflammation, or swelling of the tissue lining the sinuses. (10)

Acute sinusitis :-

A sudden onset of cold-like symptoms such as runny, stuffy nose and facial pain that does not go away after 10 to 14 days. Acute sinusitis typically lasts 4 weeks or less.

Symptoms :

- ① Facial pain/pressure
- ② Nasal stuffiness
- ③ Nasal discharge
- ④ Loss of smell
- ⑤ Cough/congestion.

Causes :

- ① Cold
- ② bacterial upper respiratory tract infection.
- ③ fungal sinus infection
- ④ allergies that cause mucus production in the sinuses
- ⑤ Lack of cilia motility.

The end